

EXHIBIT A

ENVIRONMENTAL ASSESSMENT OF GEODUCK HARVEST IN KING COUNTY, POINT HEYER TRACT (#10000)

Commercial geoduck harvest is jointly managed by the Washington Departments of Fish and Wildlife (WDFW) and Natural Resources (DNR) and is coordinated with treaty tribes through annual harvest plans. Harvest is conducted by divers from subtidal beds between -18 feet (corrected to mean lower low water-MLLW) to the minus 70 foot (at any tide height) water depth. Harvest is rotated throughout Puget Sound in five geoduck management regions. The fishery, its management, and its environmental impacts are presented in the Final Supplemental Environmental Impact Statement for the Puget Sound Commercial Geoduck Fishery (WDFW & DNR, May 2001). The proposed harvest in King County is described below.

Harvest Dates: September 1, 2004 To August 31, 2009

Tract Name: Point Heyer (#10000)

Description (Figure 1):

The Point Heyer geoduck clam tract is located in Tramp Harbor east of Vashon Island in King County. The Point Heyer geoduck tract is adjacent to and westerly and northerly of the Point Robinson geoduck tract (#10050). The tract area available for non-Indian harvest is approximately 123 acres. The tract begins approximately 4300 yards northwesterly of Point Robinson and extends northwesterly along the shoreline of Tramp Harbor about 2600 yards.

The shoreward boundary of the non-Indian Point Heyer tract is deeper and seaward of the -18 foot (MLLW) contour. Portions of the shoreward boundary in the most northerly area of the tract are 200 yards deeper and seaward of the ordinary high tide (OHT) contour. The non-Indian Point Heyer tract is inside and bounded by lines originating from a point at 47° 24.205' N. latitude, 122° 25.190' W. longitude projected westerly and northerly along the -18 foot (MLLW) water depth contour or 200 yards from the OHT contour (whichever is farther from shore) to a point at 47° 25.200' N. latitude, 122° 25.775' W. longitude; then southeasterly to a point at 47° 25.170' N. latitude, 122° 25.730' W. longitude; then southerly and easterly along the -70 ft. (MLLW) depth contour to a point at 47° 24.321' N. latitude, 122° 25.075' W. longitude; then to the point of origin.

Positions for the above noted tract boundaries are estimated using North American Datum, 1927 and recorded in decimal minutes using three decimal places. For purposes of determining tract area, the -70 ft. contour corrected to MLLW is used. The maximum allowable fishing depth during harvest is -70 ft. uncorrected to MLLW. WDFW should be contacted at (360) 796-4601, extension 203, regarding any discrepancies between estimated positions provided for tract boundaries and field derived positions, prior to any fishing.

Substrate:

Geoducks are found in a wide variety of sediments ranging from soft mud to gravel. The most common sediments where geoducks are harvested are sand with varying amounts of mud and/or gravel. The specific sediment type of a bed is primarily determined by the water current velocity. Coarse sediments are generally found in areas of fast currents and finer (muddier) sediments in areas of weak currents. The major impact of harvest will be the creation of small holes where the geoducks are removed. The holes fill in within a few days to several weeks and have no long-term effects. The substrate holes refill in areas with strong water currents much faster than in areas with weak currents. Water currents are weak and variable in the vicinity of the Point Heyer geoduck tract as recorded by a NOAA tidal current station at East Passage (1999 National Oceanic and Atmospheric Administration tidal currents tables). Stronger currents will occur offshore major points of land.

The surface substrates of the Point Heyer geoduck tract are composed of sand or sand and mud mixtures throughout. Sand is the predominate substrate type at all of the survey stations.

Water Quality:

The Washington Department of Health has classified Tramp Harbor, including all of the area proposed for geoduck harvest, as approved (WA DOH - 2002 Annual Inventory of Commercial and Recreational Shellfish Areas). The adjoining Point Robinson geoduck tract has been continuously fished by the Puyallup tribe from 1996 to 2000. Bacterial levels are below acceptable limits, and the geoducks are safe for harvest and human consumption.

This area may be subject to periodic harvest closures by DOH due to Paralytic Shellfish Poison (PSP) toxins. A regular monitoring program of commercial shellfish catch for PSP toxins is conducted by DOH to prevent PSP contaminated shellfish from entering the commercial marketplace.

The Washington State Department of Ecology routinely tests water quality parameters at a marine water monitoring station within close proximity of this geoduck tract (Station EAP001 located at 47° 25.700' N, 122° 23.300' W, reported in decimal minutes). During water quality testing during 1995 at the 30 foot water depth the mean reported dissolved oxygen concentration was 9.40 mg/L and the mean salinity was 25.90 ppt. Maximum water temperature at 30 feet was 13.7° C on September 14 and the minimum water temperature was 8.1° C on February 13.

Biota:

Geoduck:

The non-Indian portion of the Point Heyer tract is approximately 123 acres and contains an estimated 1,717,000 pounds of geoduck (Table 1). The pre-fishing biomass estimate for this tract, from a 1998 survey by WDFW, was 2,442,000 pounds. Reported landings from this tract from 1998 through March 31, 2004 total 1,181,228 pounds (2004 Geoduck Atlas Database). Geoducks at this location are considered commercial quality (Table 2).

The geoduck density on this tract is moderate to high. The estimated average geoduck density from the pre-fishing survey was 0.209 geoducks/square foot at Point Heyer. The current estimated average geoduck density is 0.13 geoducks/ square foot. The average transect density from the pre-fishing survey range from 0.003 geoducks/square foot at station #43 (1997) to 0.477 geoducks/square foot at station #26 (1998), Table 3. Commercial geoduck clam harvest on other tracts in Puget Sound has occurred with average geoduck densities less than 0.04 geoducks per square foot. The geoducks on the Point Heyer tract are moderate, averaging 2.18 pounds per geoduck, compared to the Puget Sound average of 2.0 pounds per geoduck clam. The lowest average whole weight of 1.60 pounds was observed at station #5 (1997) and the highest average whole weight of 3.64 pounds was observed at station #9 (1997), Table 4.

Geoduck harvest is managed for long term sustainable harvest (no more than 2.7% of the commercially fishable stocks are harvested each year throughout Puget Sound). The fishable portion of the total Puget Sound population includes geoducks that are in water deeper than -18 feet (corrected to MLLW) and shallower than -70 feet (uncorrected to MLLW). Other geoducks which are not harvestable are found inshore and offshore of the harvest areas. Observations in South Puget Sound show that major geoduck populations continue to depths exceeding 360 feet. Additional geoducks exist in polluted areas and are also unavailable for harvest, but continue to spawn and contribute to the total population.

The low rate of harvest is due primarily to geoduck's low rate of natural recruitment. WDFW has studied the regeneration rate of geoducks in fifteen tracts scattered throughout Puget Sound. The estimated average time to regenerate a new crop of geoducks after removal of 100 percent of the original geoducks was 39 years. The longest regeneration time was 87 years, and the shortest regeneration time was 12 years. In actual fishing 100 percent of the geoducks is never removed. The average percentage removal of the fifteen tracts mentioned above was 69 percent. The regeneration research is continuing and the final outcome may show that the harvest can sustain more than 2.7% of the fishable stocks per year.

Fish:

Geoduck beds are generally devoid of rocky outcroppings and other relief features that attract or support fish. The bottoms are relatively flat and composed of soft, unstable sediments which provide few attachments for macroalgae. Macroalgae is associated with rock fish, ling cod, and other fish species. The only fish observed during the field survey (See survey transect map; Figure 2) at the Point Heyer tract were flatfish (flounders and soles), ratfish, ratfish egg cases, skates and skate egg cases. Small fish such as sculpins were also observed and are ubiquitous in Puget Sound.

WDFW Marine Fish and Habitat Division Managers were asked of there concerns of any possible impacts on groundfish and baitfish that geoduck fishing would have. In a letter dated June 2, 1999, Paul Clarke of the Marine Fish Program stated that his only concern is a potential impact to bottom fish habitat on the Point Heyer artificial fishing reef. Mr. Clarke noted that as long as harvest does not occur within the direct vicinity of the reef impacts should be negligible. The Point Heyer artificial fishing reef is located approximately one quarter mile of the northern boundary of the Point Heyer tract. On May 24, 1999 Habitat Biologist Pamela Erstad stated that Habitat has no concerns

regarding the proposed geoduck fishing provided fishing does not occur in the immediate vicinity of eelgrass beds.

Seven marine fish species were recently considered for listing under federal Endangered Species Act (ESA). In November 2000, the National Marine Fisheries Service (NMFS) determined that three of the seven species - Pacific cod, Pacific hake and walleye pollock - did not need ESA protection. In April 2001, NMFS announced that the remaining four species under consideration - cooper rockfish, quillback rockfish, brown rockfish, and Pacific herring - are also relatively stable or are increasing with existing conservation measures in place.

Two salmon populations, Puget Sound chinook salmon and Hood Canal summer run chum salmon, were listed by the NMFS on March 16, 1999 as threatened species under the federal Endangered Species Act. Critical habitat for summer run chum salmon populations include all marine, estuarine, and river reaches accessible to the listed chum salmon between Dungeness Bay and Hood Canal and within Hood Canal. The timing for summer run chum spawning is early September to mid-October. Outmigration of juveniles has been observed in Hood Canal during February and March, though outmigration may be as late as mid-April. The Point Heyer tract is outside of the critical habitat range for Hood Canal summer run chum salmon.

Critical habitat for Puget Sound Chinook salmon include all marine, estuarine and river reaches accessible to listed chinook salmon in Puget Sound. WDFW recognizes 27 distinct stocks of chinook salmon; 8 spring-run, 4 summer-run, and 15 summer/fall and fall-run stocks. The existence of an additional five spring-run stocks is in dispute. The majority of Puget Sound chinook salmon emigrate to the ocean as subyearlings.

Streams or tributaries near the Point Heyer geoduck tract are the Duwamish River (approximately 11 nautical miles from the tract) and the Puyallup River (approximately 8.75 nautical miles from the tract). An undetermined run of chinook salmon have been identified in the Duwamish River. The production is natural and the 5-year geometric mean for total estimated escapement is 5,216 fish (NMFS, Appendix E, TM-35, Chinook Status Review). Three chinook salmon runs have been identified in the Puyallup River. The status of the Spring run of chinook salmon in the Puyallup River is extinct (NMFS, Appendix E, TM-35, Chinook Status Review). The status of the natural Summer/Fall run of chinook salmon in the Puyallup River is undetermined with a 5-year geometric mean for total estimated escapement at 2,518 fish (NMFS, Appendix E, TM-35, Chinook Status Review). The Fall run of chinook salmon in the Puyallup River is a mixed or composite production of special concern with an unknown origin and run size (NMFS, Appendix E, TM-35, Chinook Status Review).

The geographic separation (horizontal) of this tract from known spawning tributaries and vertical separation of geoduck harvest (deeper and seaward of the -18 ft. MLLW contour) from juvenile salmon rearing areas and migration corridors (upper few meters of the water column) reduces or eliminates potential impacts to salmon populations. Charles Simenstad from the University of Washington School of Fisheries stated that the "exclusionary principle of not allowing leasing/harvesting in water shallower than -18 ft. MLLW or (within) 200 yards from shore; 2 ft. vertically from elevation of lower eelgrass margin, and within any regions of documented herring or forage fish spawning should under most conditions remove the influences of harvest induced sediment plumes from

migrating salmon.” Geoduck harvest should have no impact on salmon populations.

Invertebrates:

Many different kinds of invertebrates were observed which are common to geoduck beds. The most common and obvious of these include:

Mollusks (horse clams, truncated mya clams, false geoducks, nudibranchs, moon snails, moon snail egg cases, horse mussels, cockles and geoducks); echinoderms (sea cucumbers, mud cucumbers, burrowing cucumbers, sunflower stars, sand stars, short-spined stars, false ochre stars, sun stars, rose stars, vermillion stars, spiny stars, and leather stars); chaetopterid polychaete tubes; terebellid tube worms; cnidarians (burrowing anemone, plumed anemone, and sea pens); and crustaceans (Dungeness crabs, red rock crabs, graceful crabs and hermit crabs)

Geoduck harvest has not been shown to have long-term adverse effects on these invertebrates. Geoduck harvest can depress some benthic invertebrates, however, most of these animals recover within one year.

WDFW and DNR have studied the effects of geoduck harvest on the population of Dungeness crab at Thorndyke Bay in Hood Canal. The results of the 5 year study have shown no adverse effects on crab catch due to geoduck fishing.

To determine the potential impacts to Dungeness crab, should any crabs be present in the vicinity of the tract, the percentage of substrate disturbed during fishing was calculated and compared to the entire potential crab habitat within the vicinity of the tract. The crab habitat was measured from the +1 foot level and seaward out to the -330 foot depth contour (Figure 3). Dr. Dave Armstrong at the University of Washington has determined that Dungeness crab utilize Puget Sound bottoms from the +1 foot level out to the -330 foot level. The entire potential crab habitat along and within the tract is approximately 665 acres. There were about 1,120,353 harvestable geoducks on the tract. With a harvest rate of 85%, the total number of geoducks harvested would be 952,300. Approximately 1.18 square feet of substrate is disturbed for every geoduck harvested, so $952,300 \times 1.18 = 1,123,714$ square feet. This equals about 25.8 acres. This is 3.9% of the total available crab habitat in the vicinity of the tract.

Based on observations of three transects with Dungeness crab noted (Station #s 22,23, & 66; 1997 survey) within the tract, the low amount of disturbance, plus the lack of effects observed at the Thorndyke Bay study, any effects on Dungeness crab will be very minor, if they occur at all.

Aquatic Plants:

Large attached aquatic plants are not generally found in geoduck beds in large quantities. Light restriction often limits plant growth to areas shallower than where most geoduck harvest occurs. Aquatic plants observed in the geoduck survey include:

Red algae (small foliose red algae, and *Gigartina* sp.); a diffuse diatom layer; foliose

green algae; and brown algae (*Laminaria* sp. and *Desmarestia* sp.)

WDFW completed an eelgrass survey at the proposed geoduck tract on April 16 & 20, 1998. The entire shallow boundary of Point Heyer tract was examined by WDFW SCUBA divers swimming the -16 foot (MLLW) contour. No eelgrass was observed during the survey in the vicinity of or deeper than the -16 foot (MLLW) contour. The WDFW Habitat Division stated, in a memo dated October 25, 1993, that as long as geoduck fishing was restricted seaward of the eelgrass beds they have no concerns about the fishing. The shallow boundary of geoduck harvest is set at least two vertical feet deeper and seaward of the deepest occurrence of eelgrass to protect all eelgrass from harvest activity. The shoreward boundary of this tract will be no shallower than the -18 foot contour (MLLW) or 200 yards seaward of the OHT contour (whichever is farther seaward) to conform with state statute.

Marine Mammals:

Seals are common inhabitants in South Puget Sound and are frequently observed in the vicinity of this geoduck bed. No conflicts have been observed between marine mammals and geoduck harvest.

Birds:

A variety of marine birds are observed in South Puget Sound. These include birds such as murrelets, grebes, loons, scoters, dabbling ducks, mergansers, buffleheads, cormorants, and gulls. Blue heron are also common along the shores of this area. Geoduck harvest does not appear to have any significant effect on these birds or their use of the waters where harvest occurs. Bald eagles are also present in the area of this tract. A study by DNR and WDFW was conducted at northern Hood Canal and Bainbridge Island to learn the effects of geoduck fishing on bald eagles. A significant conclusion of this study is that commercial harvest of geoduck is unlikely to have any adverse impacts on bald eagle productivity.

Other Uses:

Adjacent Land Use:

This proposed tract and upland properties adjacent to this tract are designated as rural and conservancy shoreline environments. To minimize possible disturbance to adjacent residents, harvest is not allowed within 200 yards of the ordinary high tide (OHT) line or shallower than -18 feet (MLLW) whichever is further seaward. Harvest is only allowed during daylight hours and no harvest is allowed on Saturdays, Sundays, or state holidays.

The only visual effect of harvest is the presence of the harvest vessels on the tract. These 35-40 foot boats are anchored during harvest and all harvest is conducted out of sight by divers. Noise from compressors and pumps may not exceed 50 dB measured 200 yards from the noise source.

Fishing:

This area is not a prime sportfishing area, however, some recreational salmon fishing could occur seasonally in proximity to the geoduck tract. The recreational fishing which does occur in the vicinity of this tract should not create any conflicts with the geoduck harvesting effort. Geoduck fishing should not conflict with any other commercial fisheries in the area. This area may be regulated by South Puget Sound treaty tribes including the Puyallup tribe. The state and tribes in South Puget Sound have entered into a commercial geoduck management agreement. Pursuant to this agreement, an annual state/tribal harvest plan is jointly developed. The geoduck fishery should not be in conflict with the concurrent tribal fisheries.

Navigation:

The East Passage area is used by recreational and commercial vessels traveling in southern Puget Sound. The Point Heyer geoduck tract does not lie within heavily used vessel traffic lanes. Geoduck harvesting at this site should not result in any significant navigational conflicts. The Department of Natural Resources will notify the local boating community, as well as the U.S. Coast Guard for inclusion in the Notice to Mariners, the local Port authority, and the N.W. Vessel Pilots Association prior to non-Indian harvests.

Summary:

The geoduck harvest is proposed for the Point Heyer geoduck tract along the eastern shoreline of Vashon Island. The commercial tract is approved for shellfish harvest by DOH. To reduce possible impacts to baitfish and eelgrass, harvest will be deeper and seaward of the -18 foot (MLLW) contour. To conform with state statute harvest will be seaward and deeper than the 200 yard from the ordinary high tide contour. The anticipated environmental impacts of this harvest are within the range of conditions discussed in the 2001 Final Supplemental Environmental Impact Statement for the Puget Sound. No significant impacts are expected from this harvest.